

### **AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application.

#### **Listing of Claims:**

1. (Currently Amended)        A semiconductor device including a liquid crystal driving circuit, said liquid crystal driving circuit comprising a digital functional unit, an analog functional unit, a shift register coupled between said digital functional unit and said analog functional unit, and a first terminal coupled to said shift register, at a last stage of the digital functional unit, for outputting an output of a test result of said digital functional unit toward outside of said liquid crystal driving circuit without passing through said analog functional unit.

2. (Currently Amended)        A semiconductor device including a liquid crystal driving circuit, said liquid crystal driving circuit comprising a digital functional unit, an analog functional unit, and a shift register for functionally dividing said digital functional unit and said analog functional unit from each other and a first terminal coupled to the shift register, at a last stage of the digital functional unit, for controlling a test of said digital functional unit externally of said liquid crystal driving circuit independently of said analog functional unit and a fourth-second terminal for controlling a test of said analog functional unit externally of said liquid crystal driving circuit independently of said digital functional unit.

3. (Previously Presented)       The semiconductor device according to claim 1, wherein said digital functional unit includes a display controller and a random access memory (RAM) for storing display data,

said analog functional unit includes a gradation voltage generating circuit and a gradation voltage selecting circuit, and

said device includes hold means for holding an output of the display data storage RAM to read data held in said hold means to outside of said liquid crystal driving circuit through said first terminal and sets predetermined data in said hold means from outside of said liquid crystal driving circuit through said shift register.

4. (Previously Presented) The semiconductor device according to claim 2, wherein said digital functional unit includes a display controller and a display data storage RAM,

said analog functional unit includes a gradation voltage generating circuit and a gradation voltage selecting circuit, and

said device includes hold means for holding an output of said display data storage RAM, reads data held in said hold means to outside of said liquid crystal driving circuit through a data output terminal and sets predetermined data in said hold means from outside of said liquid crystal driving circuit through said shift register.

5. (Previously Presented) The semiconductor device according to claim 3, wherein said shift register and/or said first terminal is used while sharing with a terminal for use during a normal operation.

**Claim 6. (Canceled).**

7. (Currently Amended) A semiconductor device having a liquid crystal driving circuit, wherein said liquid crystal driving circuit comprises a digital functional unit

and an analog functional unit and at least one shift register coupled between said digital functional unit and said analog functional unit, said digital functional unit including at least a display controller, and said analog functional unit including a gradation voltage generating circuit and a gradation voltage selecting circuit, and changeover means for changing an output of said gradation voltage generating circuit to a predetermined two-level voltage value, and further comprising a first terminal coupled to the shift register, at a last stage of the digital functional unit, for controlling a test of said digital functional unit externally of said liquid crystal driving circuit independently of said analog functional unit.

8. (Currently Amended) A testing method of a semiconductor device having a liquid crystal driving circuit including a digital functional unit and an analog functional unit, said method comprising the steps of:

functionally dividing said digital functional unit and said analog functional unit from each other using at least one shift register coupled between said digital functional unit and said analog functional unit; and

outputting an output of a test result of said digital functional unit to outside of said liquid crystal driving circuit through a first terminal coupled to said at least one shift register, at a last stage of the digital functional unit, without passing through said analog functional unit.

9. (Currently Amended) A testing method of a semiconductor device having a liquid crystal driving circuit including a digital functional unit and an analog functional unit, the method comprising the steps of:

functionally dividing said digital functional unit using at least one shift register coupled between said digital functional unit and said analog functional unit; and

controlling testing of said digital function unit externally of said liquid crystal driving circuit through a first terminal coupled to the shift register, at a last stage of the digital functional unit, for controlling a test of said digital functional unit externally of said liquid crystal driving circuit independently of said analog functional unit.

controlling testing of said analog functional unit externally of said liquid crystal driving circuit through a second terminal so as to perform the testing of said analog functional unit independently of said digital functional unit.

10. (Original) The testing method of a semiconductor device according to claim 8, wherein said digital functional unit and said analog functional unit are controlled independently of each other to perform testing of said digital functional unit and testing of said analog functional unit in an overlapping manner.

11. (Original) The testing method of a semiconductor device according to claim 9, wherein said digital functional unit and said analog functional unit are controlled independently of each other to perform testing of said digital functional unit and testing of said analog functional unit in an overlapping manner.

12. (Original) The testing method of a semiconductor device according to claim 10, wherein the testing of said digital functional unit includes a display function test, and the testing of said analog functional unit includes a gradation output test.

13. (Original) The testing method of a semiconductor device according to claim 11, wherein the testing of said digital functional unit includes a display function test, and the testing of said analog functional unit includes a gradation output test.

14. (Currently Amended) A testing method of a semiconductor device having a liquid crystal driving circuit, said liquid crystal driving circuit including a digital functional unit with a display controller and a display data storage RAM, an analog functional unit with a gradation voltage generating circuit and a gradation voltage selecting circuit, and at least one shift register coupled between said digital functional unit and said analog functional unit; said method comprising the steps of:

- changing an output of said gradation voltage generating circuit to a two-level voltage value by a changeover means;
- selectively setting each gradation voltage at one of different two-level voltage values; and
- changing an output voltage of said liquid crystal driving circuit to a two-level voltage to thereby perform a gradation output test, and  
controlling testing of said digital functional unit externally of said liquid crystal driving circuit through a first terminal coupled to the shift register, at a last stage of the digital functional unit, for controlling a test of said digital functional unit externally of said liquid crystal driving circuit independently of said analog functional unit.

15. (Previously Presented) A semiconductor device according to claim 1, wherein said shift register includes a plurality of shift registers.

16. (Currently Amended) A semiconductor device including a liquid crystal driving circuit,

said liquid crystal driving circuit comprising:

a digital functional unit;

an analog functional unit;

a plurality of shift registers coupled between said digital functional unit and said analog functional unit; and

a terminal coupled to said plurality of shift register, at a last stage of the digital functional unit, for outputting an output of a test result of said digital functional unit toward outside of said liquid crystal driving circuit without passing through said analog functional unit.